

# Welcome!



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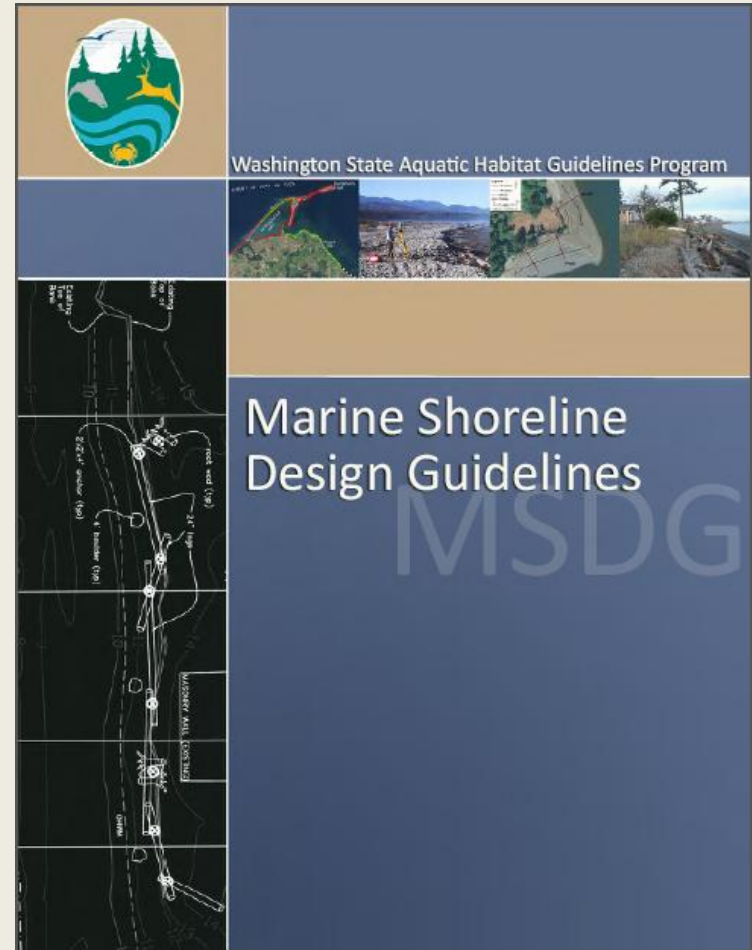


## Soft Shoreline Stabilization

Shoreline Master Program Planning and  
Implementation Guidance



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# Presenters

- Kelsey Gianou



- Washington Department of Ecology
- Soft Shorelines and Shoreline Master Programs

- Theresa Mitchell



- Washington Department of Fish and Wildlife
- Marine Shoreline Design Guidelines

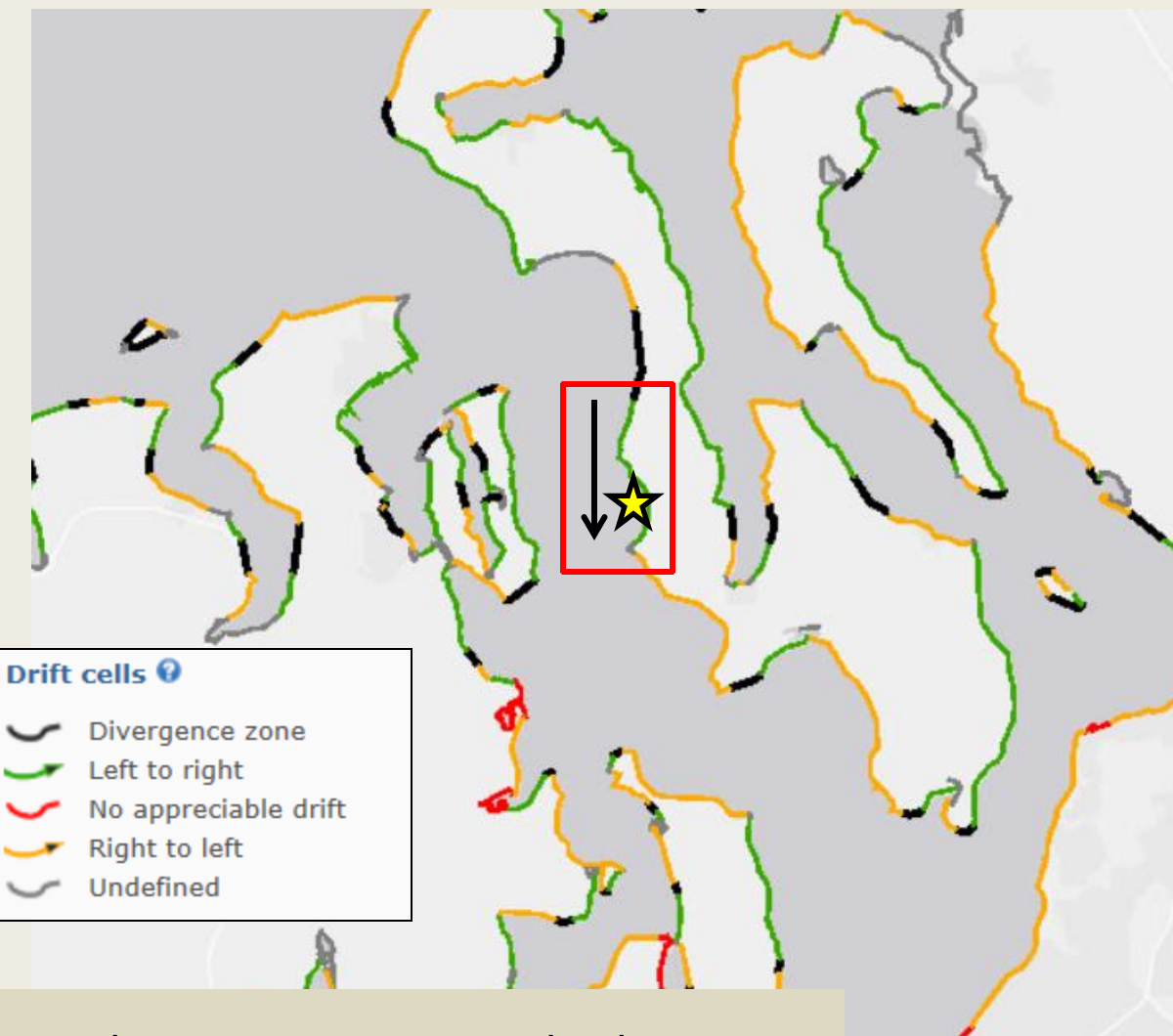


# Soft Shorelines and Puget Sound

- Shoreline Processes
- Impacts of Hard Armoring
- Soft Shoreline Stabilization



# Shoreline Processes: The Drift Cell



1. Sediment Source



2. Transport Zone



3. Sediment Sink



# Shoreline Processes: The Drift Cell



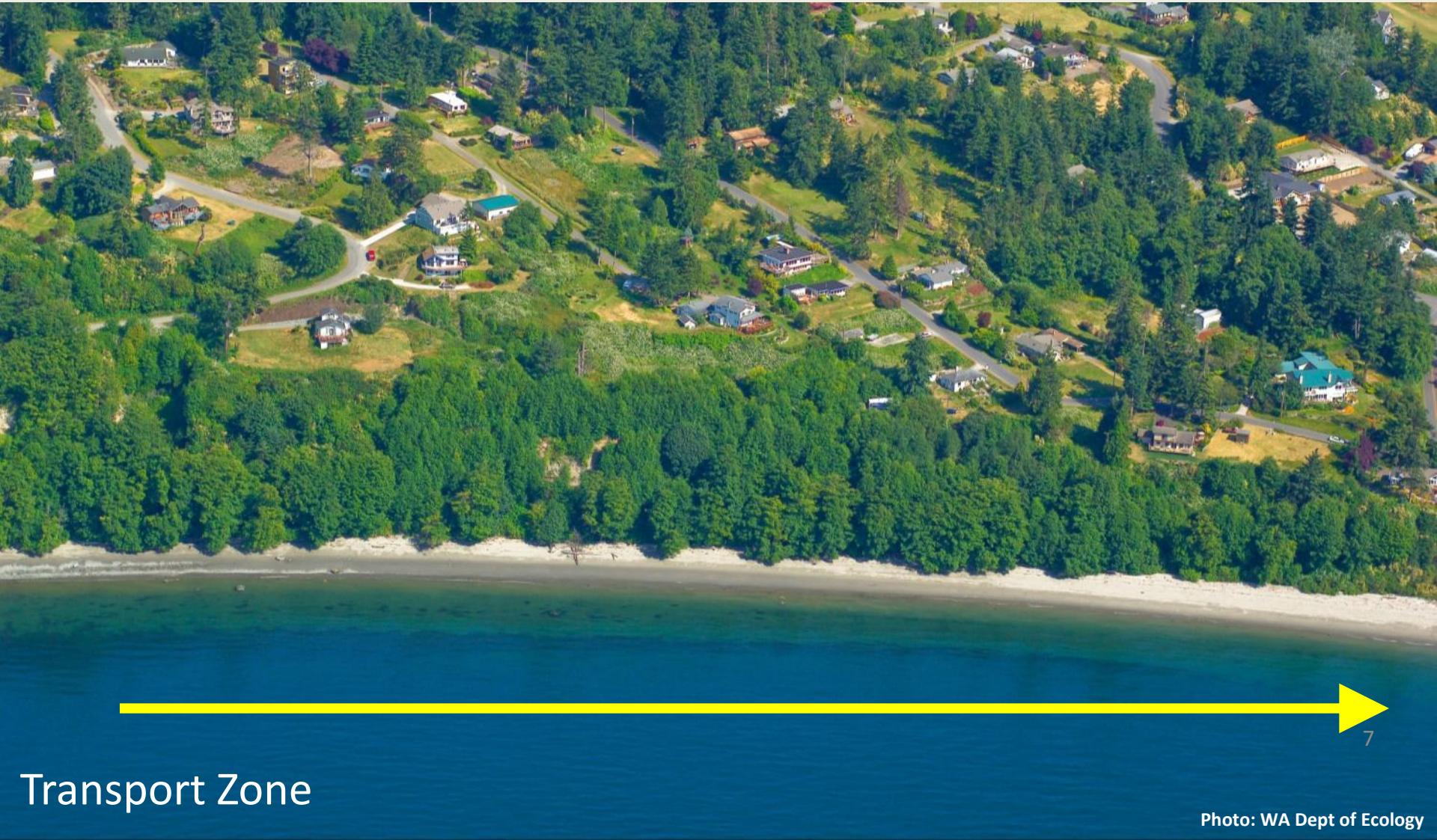
Sediment source



6



# Shoreline Processes: The Drift Cell





# Shoreline Processes: The Drift Cell





# Shoreline Processes: Habitat

Nutrients

Shade

Insects

Debris

Water



Habitat for:

Fish

Insects

Vegetation

Birds

Photo: Kelsey Gianou, ECY

9

# Hard Armoring Impacts

- Alters sediment availability and movement
- Loss of upper beach and backshore
- Modifies ecosystem connectivity

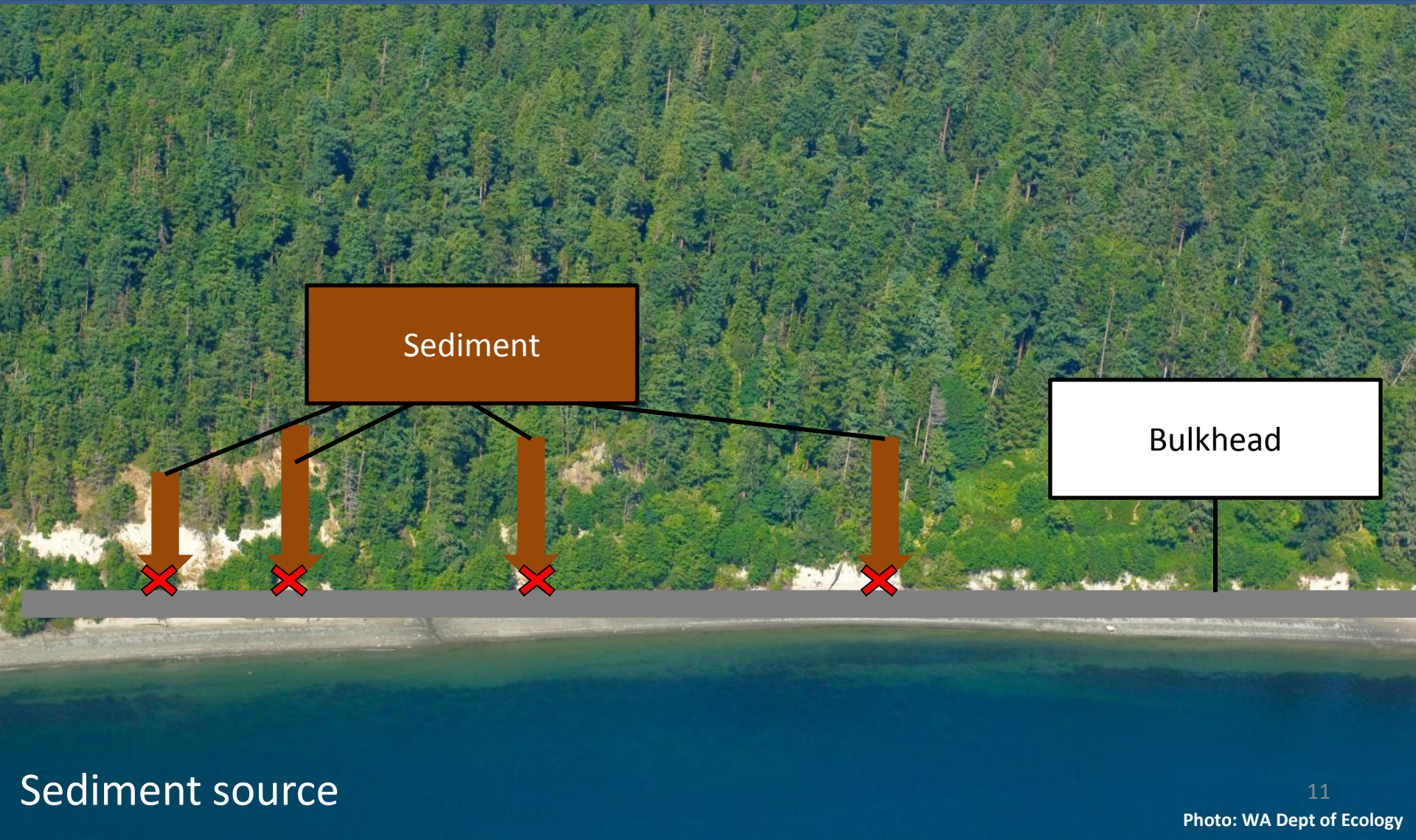
Photo: Hugh Shipman, ECY



## People & Habitats



# Impacts: Sediment Movement



Sediment

Bulkhead

Sediment source



# Impacts: Sediment Movement



Hugh Shipman, ECY

Transport Zone



# Impacts: Loss of upper beach and backshore



Transport Zone

Photo: WA Dept of Ecology

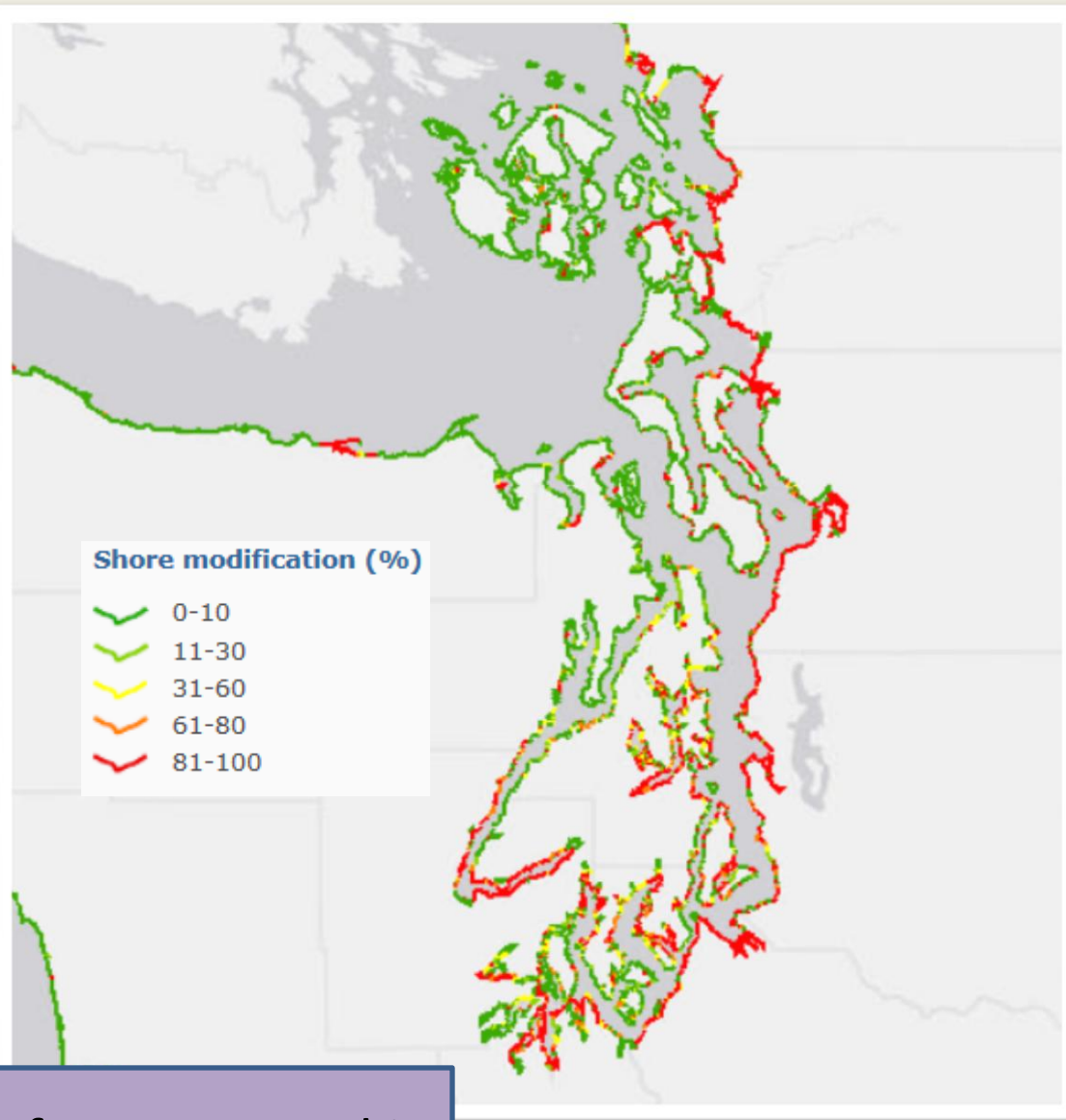


# Impacts: Modifies Ecosystem Connectivity



Photo: Teresa Mitchell, WDFW





~1/3 of Puget Sound is  
Armored

Washington State Coastal Atlas  
<https://fortress.wa.gov/ecy/coastalatlus/> 2013

Photo: Hugh Shipman, ECY



# What is Soft Shoreline Stabilization?

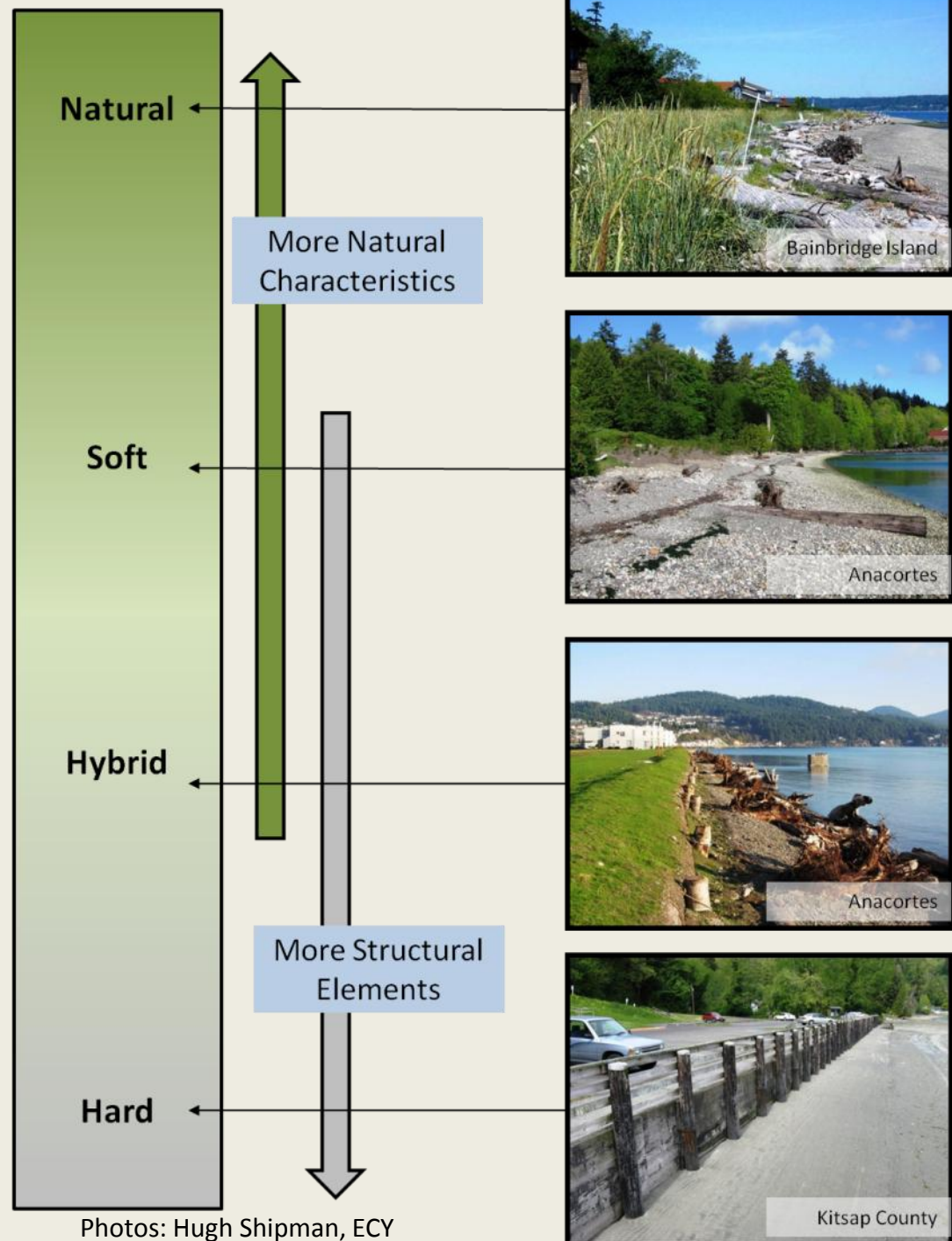
- Projects that:
  1. Control erosion
  2. Maintain and enhance shoreline ecological functions





# Shoreline Continuum

Site Specific!



# Soft Example: Sea Shore Lane

Clallam County

Photo: Hugh Shipman, ECY

Before





# Soft Example: Sea Shore Lane

Clallam County

Photo: Hugh Shipman, ECY

Before

Gravel Placement,  
Vegetation Enhancement

After

Photo: Kelsey Gianou, ECY



Soft substrates; dynamic  
features; natural materials

# Soft Example: Cornet Bay State Park

Whidbey Island

Photo: Kelsey Gianou, ECY

Before





# Soft Example: Cornet Bay State Park

Whidbey Island

Photo: Kelsey Gianou, ECY

Before

Bulkhead Removal and  
Vegetation Enhancement

After

Photo: Kelsey Gianou, ECY



Habitat connectivity; soft  
substrates; gentle slope

# Soft Example: Marine Park

Bellingham

Photo: Jim Johannessen, Coastal Geologic Services

Before





# Soft Example: Marine Park

Bellingham

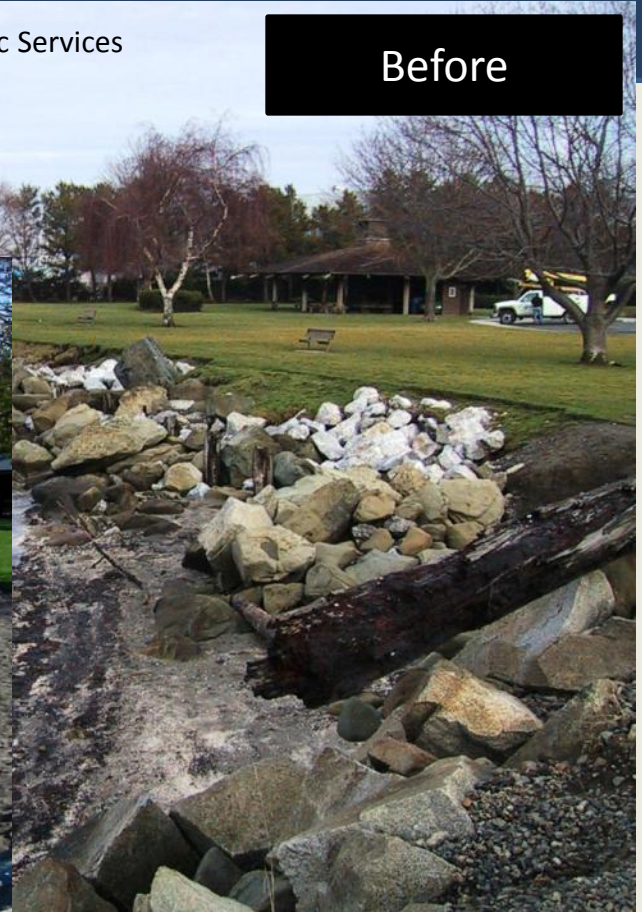
Photo: Jim Johannessen, Coastal Geologic Services

Before

Riprap Removal and  
Beach Nourishment

After

Photo: Hugh Shipman, ECY



Soft substrates; detritus  
accumulation; dynamic  
features; priority species

# Why Soft Shoreline Projects?

- Minimize Impacts
- Enhance Habitats
- Improve Aesthetics
- Washington Administrative Code:
  - Soft is preferred over Hard Armoring
  - Must demonstrate a need for stabilization
  - Must demonstrate that soft won't work before permitting hard options





# Important Notes

- Soft Project locations and designs should be
  - successful
  - appropriate

## Shoreline Master Programs:

- plan for soft shoreline opportunities
- understand constraints



Photo: Kelsey Gianou, ECU



Photo: Hugh Shipman

# Soft Shoreline Stabilization

## SMP Planning and Implementation Guidance

- What is Soft Shoreline Stabilization?
- SMP Updates and Soft Shorelines
- Planning Opportunities
- Info for implementing updated SMP regulations



**Kelsey Gianou**

WA Dept of Ecology  
(425) 649-7007

kgia461@ecy.wa.gov



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# Soft Example: Kitsap Memorial Park

Kitsap County

Before



Photo: Hugh Shipman, ECY

Bulkhead Removal, Vegetation,  
gravel placement, anchored  
large wood

After



Habitat and sediment  
connectivity; natural  
materials; similar settings

Photo: Kelsey Gianou, ECY